Heat Surveillance Summary - 1999

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The summer of 1999 in Missouri started with very comfortable temperatures. However, when the summer was over, Missouri had experienced a two-week heat wave and the highest number of heat-related illnesses and deaths since the great heat wave of 1980. During the summer of 1999, 968 heat-related illnesses and 92 heat-related deaths were reported in Missouri. See Figures 1 and 2.

The Missouri Department of Health issued a statewide Hot Weather Health Advisory on July 20, 1999. See side bar on page 3 for a description of the three advisory stages. The heat index on July 19 had been 110 in St. Louis, 107 in Kansas City, 104 in Columbia, 102 in Springfield and 105 in Cape Girardeau. The advisory was upgraded to a statewide Hot Weather Health Warning the next day when high heat indexes continued. Missouri remained under a statewide Hot Weather Health Warning until August 3 when heat indexes had dropped considerably. During this heat wave, there were eight days in a row when the heat index ranged from 105–119 statewide. The 13-day heat wave accounted for 68 percent (655/968) of the heat-related illnesses and 86 percent (79/92) of the heat-related deaths that occurred in 1999. The majority of the heat-related deaths occurred during the latter half of the nearly two-week heat wave. See Figure 3.

The first peak of heat-related illnesses and deaths in 1999 occurred from July 4–7 when the first wave of high heat indexes occurred in Missouri. An increase in heat-related illnesses in mid-August included approximately 100 high school band members treated for heat-related illness at the Missouri State Fair on August 12 when heat indexes reached a one-day peak with a heat index of 118 in St. Louis, 106 in Kansas City, 112 in Columbia, 112 in Springfield and 120 in

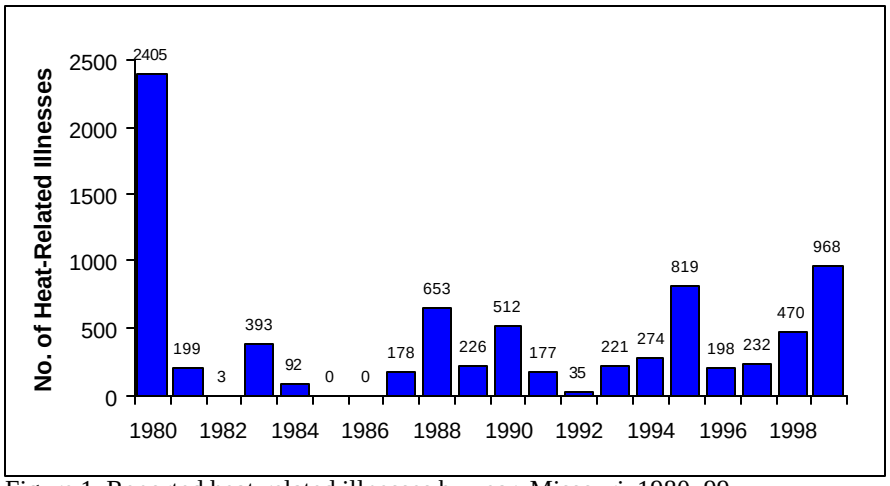

Figure 1. Reported heat-related illnesses by year, Missouri, 1980–99.

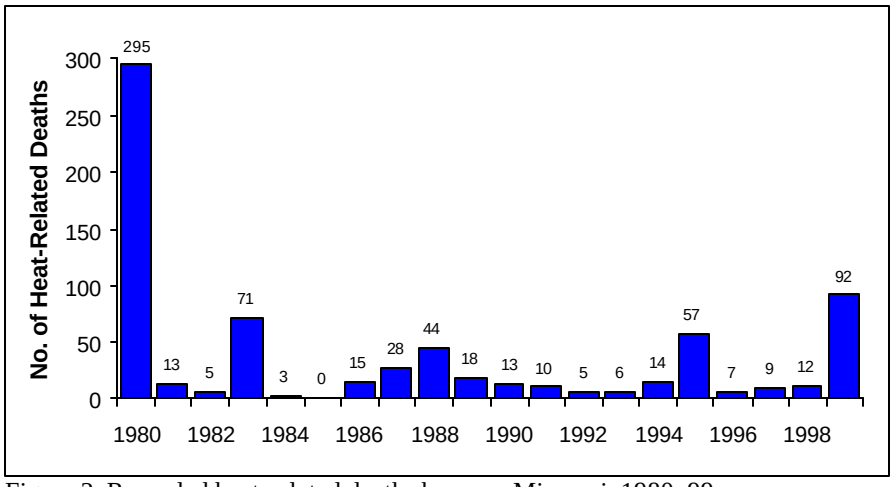

Figure 2. Recorded heat-related deaths by year, Missouri, 1980–99.

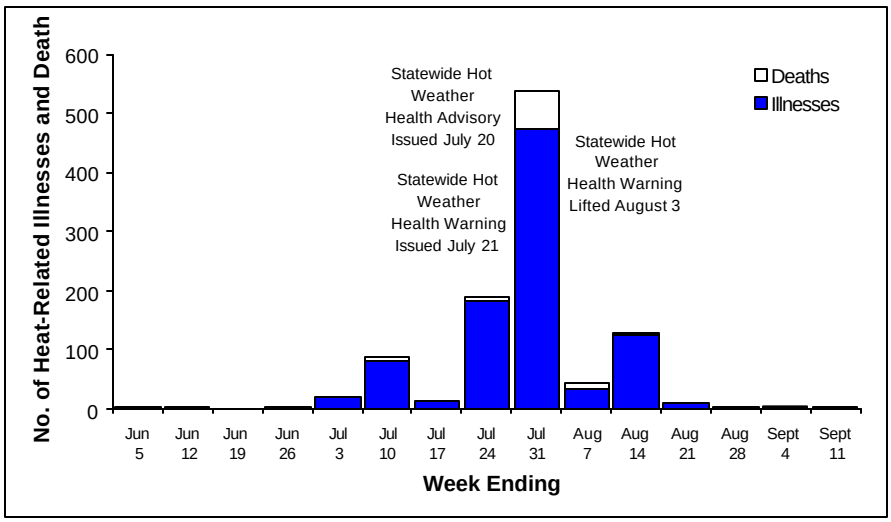

Figure 3. Reported heat-related illnesses and recorded heat-related deaths by week of occurrence, Missouri, Summer 1999.

Cape Girardeau. By the following day, heat indexes had dropped to below 85 for all areas except Cape Girardeau.

In 1998, one statewide Hot Weather Health Advisory was issued on June 25 and a statewide Hot Weather Health Warning was issued on July 20. In 1998, 470 heat-related illnesses and 12 heat-related deaths were reported in Missouri.

There are two distinct types of heatstroke. Both are characterized by extreme hyperthermia and multiple metabolic and hemodynamic abnormalities, but they arise in very different clinical settings.[1]

Classic Heatstroke

Occurring primarily in epidemics during summer heat waves, classic heatstroke is most likely to affect the elderly and patients with serious underlying illnesses. Infants are also at risk. The urban poor are particularly vulnerable. The typical victim is confined at home without benefit of air conditioning or fans. Hence, when extreme ambient heat and humidity impair the body's ability to lose heat by radiation and evaporation, body temperature rises. Dehydration—common in the elderly—is an important predisposing factor. Other risk factors include obesity, neurologic or cardiovascular disease, and use of diuretics, neuroleptics or medications with anticholinergic properties that interfere with sweating. Alcohol use may be a risk factor.[1]

Exertional Heatstroke

Like classic heatstroke, exertional heatstroke occurs during hot, humid weather. Typically, however, it occurs sporadically, affecting healthy young persons engaged in strenuous physical activity. In the United States, athletes, military recruits and industrial workers are at greatest risk. Predisposing factors include lack of acclimatization to the heat, lack of cardiovascular conditioning, heavy clothing and dehydration.[1]

Of the 92 heat-related deaths in 1999, 68 (74%) were in individuals aged 65 or older. Of those 68 elderly deaths, 63 (93%) occurred inside residences and would meet the criteria of a classic heatstroke: 24 (38%) had no air conditioning, 19 (30%) had an air conditioner but would not use it, 11 (17%) had an air conditioner that was not working properly, and availability of air conditioning is unknown for 9 (14%) deaths. Of the 63 deaths, 35(56%) were from the St. Louis area and 15 (24%) were from Kansas City.

During prolonged periods of high temperatures, air conditioning is the best preventive measure. The elderly and chronically ill are especially more vulnerable to heat because they may perspire less and are more likely to have health problems requiring medications that impair the body's natural defenses to adjust to heat. Most of the elderly were found in homes with fans blowing

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Department of Health
Stages of Hot Weather Health Advisories

A statewide **Hot Weather Health Advisory** will be issued when heat indexes of 105° in a large proportion of the state are first reached (or predicted). The Department of Health will inform the public about the risks of heat-related illness and urge concern for those at high risk. Monitoring of temperatures and heat indexes will be intensified. An **Advisory** will not be canceled.

A statewide **Hot Weather Health Warning** will be issued when:

1. Heat indexes, measured at peak afternoon temperatures, have remained at 105° or more for two days in a large proportion of the state **and**
2. When weather predictions are for continued high-stress conditions for at least 24-48 hours in a large proportion of the state.

During a **Warning**, the Department of Health will encourage local health departments to assure that cooling shelters are available and also encourage other community agencies to provide relief from the heat stress. A **Warning** will be downgraded or canceled when heat indexes in a large proportion of the state fall below 105° for 48 hours and the forecast is for 48–72 hours of continued relief from heat stress.

The Department of Health will recommend to the Governor that a statewide **Hot Weather Health Emergency** be declared when:

1. Extensive areas of the state are experiencing high and sustained levels of heat stress (determined when the heat index reaches 105° for three days); **and**
2. Surveillance data demonstrate increased levels of heat-related illness and death statewide; **and**
3. The National Weather Service predicts that hot and humid conditions are likely to continue for several days in a large proportion of the state.

An **Emergency** will be canceled when the heat indexes in a large proportion of the state fall below 105° for 48 hours and the National Weather Service predictions indicate a low probability for the return of severe conditions for the following 48 to 72 hours.

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and windows closed. For some, even encouragement from relatives and friends could not convince them to use their air conditioners. Many did not or could not pay the high electric bill associated with air conditioning, while others stated they had made it through other hot summers without air conditioning or that the cold bothered their arthritis. One elderly individual was found in his home with the windows closed and still wearing thermal underwear.

Electric fans may be useful to increase comfort and to draw cool air into the home at night, but should not be relied on as the primary cooling device during a heat wave. When the temperature is in the upper 90s or higher, a fan will deliver overheated air to the skin at a rate that exceeds the capacity of the body to get rid of the heat, even with sweating, and the net effect is to add heat rather than to cool the body. The better alternative by far when the temperature soars is to use an air conditioner if one is available or to seek shelter in an air-conditioned building.

Of the 68 elderly deaths, five (7%) occurred outside. Three of those deaths would meet the criteria of an exertional heatstroke: one individual died working in the field on a tractor, another was mowing an embankment and the other was fixing a fence.

Of the 92 heat-related deaths in 1999, 24 (26%) were under age 65, ranging from 37 to 64 years old. Of those 24 deaths, 18 (75%) occurred inside residences and would meet the criteria of a classic heatstroke: 15 (83%) had no air conditioning, one (6%) had an air conditioner but would not use it and availability of air conditioning is unknown for two (11%) deaths. Most of these individuals were on medications for health conditions or were known to consume excessive amounts of alcohol. Of the 18 deaths, 7 (39%) were from the St. Louis area and 5 (28%) were from Kansas City.

Of the 24 deaths in those under 65, six (25%) occurred outside. One of these deaths might be classified as an exertional heatstroke; the individual had been exercising excessively outside. Two of the six deaths were in homeless individuals, two individuals fell outside due to excessive consumption of alcohol and one was sunbathing while consuming alcohol.

Weather forecasts call for another hot, dry summer in 2000. Therefore, the Missouri Department of Health encourages health care providers to reemphasize to patients preventive measures to reduce heat-related illness during prolonged hot weather:

- Avoid direct sunlight.
- Stay in coolest location available.
- Spend time in an air-conditioned place.
- Place wet towels or ice bags on the body or dampen clothes.
- Take cool baths or showers frequently.
- Reduce the number of layers of clothing.
- Wear lightweight, loose-fitting garments.
- Avoid strenuous physical activity and reschedule activities, such as shopping, to a cooler time of day.
- Increase intake of fluids such as water and juices.
- Avoid alcoholic beverages (beer, wine or liquor).
- Contact family or friends at least once a day.
- Check to see if medications you take affect the body's response to heat.
- Never leave infants, children or pets unattended in a parked car or other hot environment.

Health care providers who become aware of heat-related illnesses or deaths, are asked to report them promptly to their local public health agencies.

Further information on prevention of heat-related illness and past surveillance data for Missouri is available through the Department of Health web site at **http://www.health.state.mo.us/ColdAndHeat/CAndH.html** or by calling the Office of Epidemiology at (573) 751-6128.

REFERENCE:

1. Simon HB. Hyperthermia and Heatstroke. Hosp Pract; August 15, 1994: 65–80.

Blastomycosis Investigation

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presence of blastomycosis in southeastern Missouri. Such increased awareness is intended to promote the early recognition of the signs/symptoms of the disease, as well as to emphasize the need for individuals to promptly seek medical attention should such signs/symptoms occur.

A blastomycosis fact sheet is printed on pages 5–6 of this issue. MDOH encourages health care providers to distribute copies of the fact sheet to patients/clients who are at-risk for acquiring blastomycosis, including men 30–59 years of age, and individuals with outdoor exposure during work, such as farmers and forestry workers, or individuals participating in recreational activities in wooded areas and along waterways.

A rule revision is in process that will add blastomycosis to the list of reportable diseases. To support the investigation, health care providers are strongly encouraged to report cases of blastomycosis to their local public health agency within three days of first knowledge or suspicion. Cases can also be reported to MDOH's Section of Communicable Disease Control and Veterinary Public Health at (573) 751-6113 or (800) 392-0272.